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10/755,700	01/10/2004	Christine M. Greiser	A3182Q-US-NP	3437

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EXAMINER

FIDLER, SHELBY LEE

ART UNIT	PAPER NUMBER
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2861

DATE MAILED: 02/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/755,700	GREISER ET AL.	
	Examiner	Art Unit	
	Shelby Fidler	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6,9-22, 25-32 is/are rejected.
- 7) ☒ Claim(s) 7,8,23 and 24 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/10/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

The abstract of the disclosure is objected to because line 3 recites "extendis." Correction is required. See MPEP § 608.01(b).

Claim Objections

Claims 7 and 8 are objected to because of the following informalities: No antecedent basis is provided for the "sub-columns." Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 10-14, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Moore et al. (US 5610645).

Moore et al. teaches the following:

***regarding claims 1, 2, 11, and 12, a drop emitting device comprising:**

a linear array of side by side substantially mutually parallel columnar arrays of ink drop generators (*elements A, B, C, and D form a columnar array, Figure 1; see Drawing A*), the linear array extending along an X-axis (*Figure 1*), and the columnar arrays being oblique to the X-axis (*Figure 1*);

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each columnar array comprised of a first linear array of ink drop generators that is interleaved with a second linear array of ink drop generators (*elements of a kind form a linear array, Figure 1*);

wherein the first linear arrays of ink drop generators are fluidically coupled to a first ink manifold (*yellow manifold : elements A, Figure 1*); and

wherein the second linear arrays of ink drop generators are fluidically coupled to a second ink manifold (*magenta manifold : elements B, Figure 1*).

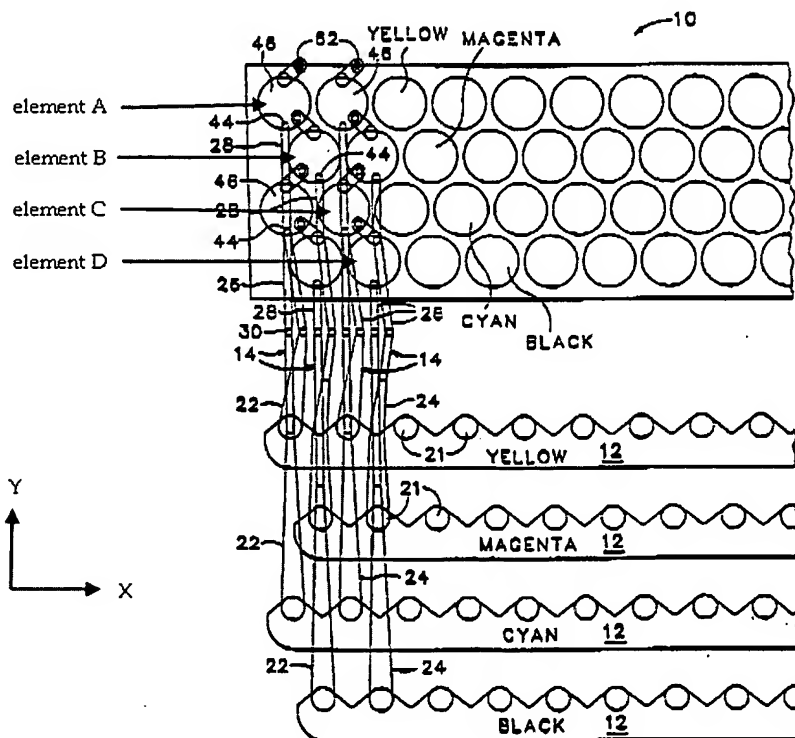


Fig.1

Drawing A: Figure 1 from Moore et al., edited for clarification

*regarding claims 3 and 13, the drop generators comprise piezoelectric drop generators (*col. 5, lines 2-6*).

***regarding claims 4 and 14**, the drop generators respectively include an ink pressure chamber (*element 44, Figure 2*), an outlet channel (*element 50, Figure 2*), and a nozzle (*element 52, Figure 2*).

***regarding claim 5**, the first ink manifold receives ink of a first color (*yellow element 12, Figure 1*), and the second ink manifold receives ink of a second color (*magenta element 12, Figure 1*).

***regarding claims 10 and 16**, the drop generators are implemented in a laminar stack of plates (*col. 4, lines 40-43*).

Claim 27-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Kanda et al. (US 6502921 B2).

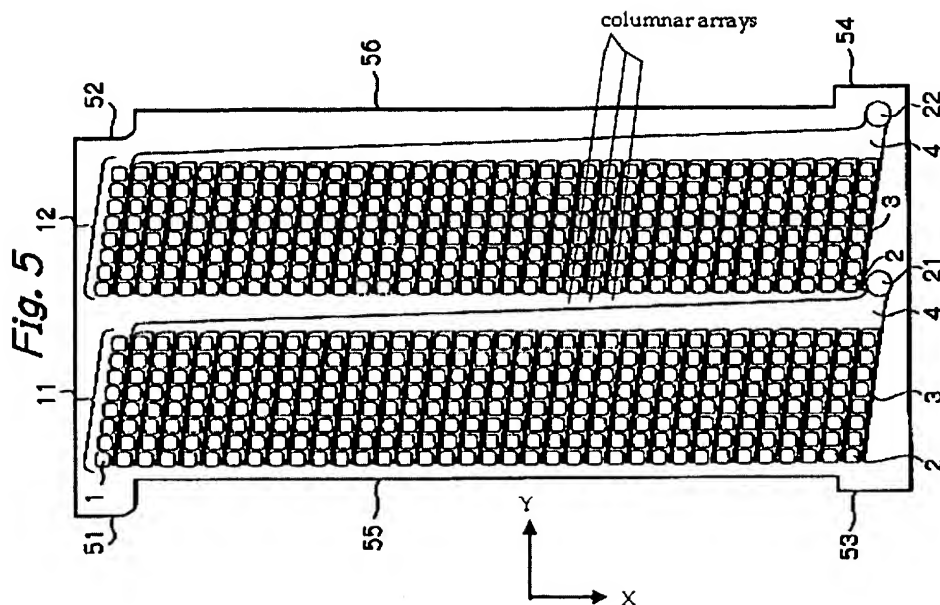
Kanda et al. teaches the following:

***regarding claim 27**, a drop emitting device comprising:

a linear array (*element 12, Figure 5*) of side by side substantially mutually parallel first columnar arrays of ink drop generators (*Figure 5; see Drawing B*), the linear array of first columnar arrays of ink drop generators extending along a first axis (*X-axis, Figure 5*), and the first columnar arrays being oblique to the first axis (*Figure 5*);

a second linear array (*element 11, Figure 5*) of side by side substantially mutually parallel second columnar arrays of ink drop generators (*Figure 5, see Drawing B*), the second linear array of side by side substantially mutually parallel second columnar arrays of ink drop generators extending along the first axis (*X-axis, Figure 5*), the second columnar arrays being oblique to the first axis (*Figure 5*); and

the second linear array of columnar arrays being adjacent the first array of first columnar arrays along a second axis orthogonal to the first axis (*elements 11 and 12 adjacent along Y-axis, Figure 5*).



Drawing B: Figure 5 from Kanda et al., edited for clarification

***regarding claim 28**, the first columnar arrays of drop generators comprise first linear arrays of drop generators (*indicated by elements 1 of element 12, Figure 5*), and the second columnar arrays of drop generators comprise second linear arrays of drop generators (*indicated by elements 1 of element 11, Figure 5*).

***regarding claim 29**, the drop generators comprise piezoelectric drop generators (*col. 2, lines 21-23*).

***regarding claim 30**, the drop generators respectively include an ink pressure chamber (*element 2, Figure 7C*), an outlet channel (*unreferenced channel between elements 1 and 2, Figure 7C*), and a nozzle (*element 1, Figure 7C*).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 27, 29, 30, and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Okuda et al. (US 6824083 B2).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Okuda et al. teaches the following:

***regarding claim 27, a drop emitting device comprising:**

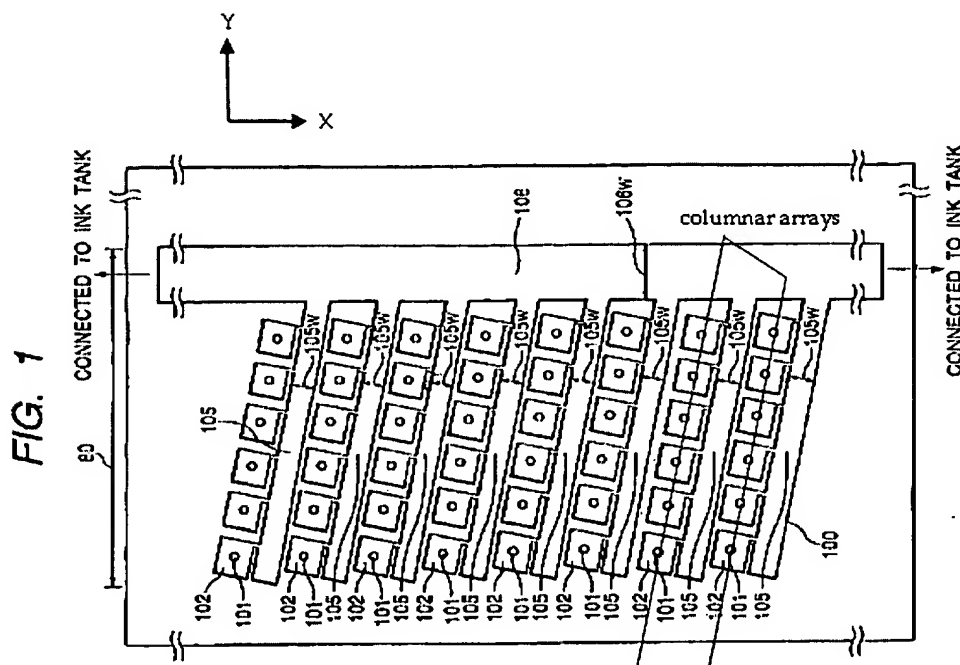
a linear array of side by side substantially mutually parallel first columnar arrays of ink drop generators (*Figure 1; see Drawing C*), the linear array of first columnar arrays of ink drop generators extending along a first axis (*X-axis, Figure 1*), and the first columnar arrays being oblique to the first axis (*Figure 1*);

a second linear array (*col. 5, lines 34-37*) of side by side substantially mutually parallel second columnar arrays of ink drop generators (*Figure 1; see Drawing C*), the second linear array of side by side substantially mutually parallel second columnar arrays of ink drop generators

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extending along the first axis (X-axis, Figure 1), the second columnar arrays being oblique to the first axis (Figure 1); and

the second linear array of columnar arrays being adjacent the first array of first columnar arrays along a second axis orthogonal to the first axis (elements 90 and 91 adjacent along the Y-axis, Figure 2).



Drawing C: Figure 1 from Okuda et al., edited for clarification

*regarding claim 29, the drop generators comprise piezoelectric drop generators (col. 16, lines 35-36).

*regarding claim 30, the drop generators respectively include an ink pressure chamber (element 102a, Figure 11b), an outlet channel (unreferenced channel between elements 101a and 102a, Figure 11b), and a nozzle (element 101a, Figure 11b).

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***regarding claim 32**, the drop generators are implemented in a laminar stack of metal plates
(col. 16, lines 33-34).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moore et al. (US 5610645) in view of Allen et al. (US 5469199).

Moore et al. teaches all claim limitations except the following:

***regarding claim 6**, the first ink manifold and the second ink manifold receive ink of the same color

Allen et al. teaches the following:

***regarding claim 6**, a first manifold and a second manifold (*manifolds are separated by full lines between elements 27, Figure 1a*) can receive ink of the same color (col. 4, lines 33-36)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Moore's manifold colors with Allen's use of the same color manifolds. The motivation for doing so is to print in monochrome rather than multi-color.

Claims 9, 15, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moore et al. (US 5610645) in view of Eriksen (US 5079571).

Moore et al. teaches all claimed limitations except the following:

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***regarding claims 9 and 15, the ink drop generators receive melted solid ink**

Eriksen teaches the following:

***regarding claims 9 and 15, the ink drop generators receive melted solid ink (col. 3, lines 65-67)**

At the time of invention, it would have been obvious to a person of ordinary skill in the art to substitute melted solid ink for liquid ink. The motivation for doing so, as taught by Eriksen, is that the two types of inks are art-recognized equivalents (col. 3, lines 65-67).

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kanda et al. (US 6502921 B2) in view of Eriksen (US 5079571).

Kanda et al. teaches all claimed limitations except the following:

***regarding claim 31, the ink drop generators receive melted solid ink**

Eriksen teaches the following:

***regarding claim 31, the ink drop generators receive melted solid ink (col. 3, lines 65-67)**

At the time of invention, it would have been obvious to a person of ordinary skill in the art to substitute melted solid ink for liquid ink. The motivation for doing so, as taught by Eriksen, is that the two types of inks are art-recognized equivalents (col. 3, lines 65-67).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kanda et al. (US 6502921 B2) in view of Murakami et al. (US 6896357 B2).

Kanda et al. teaches the following

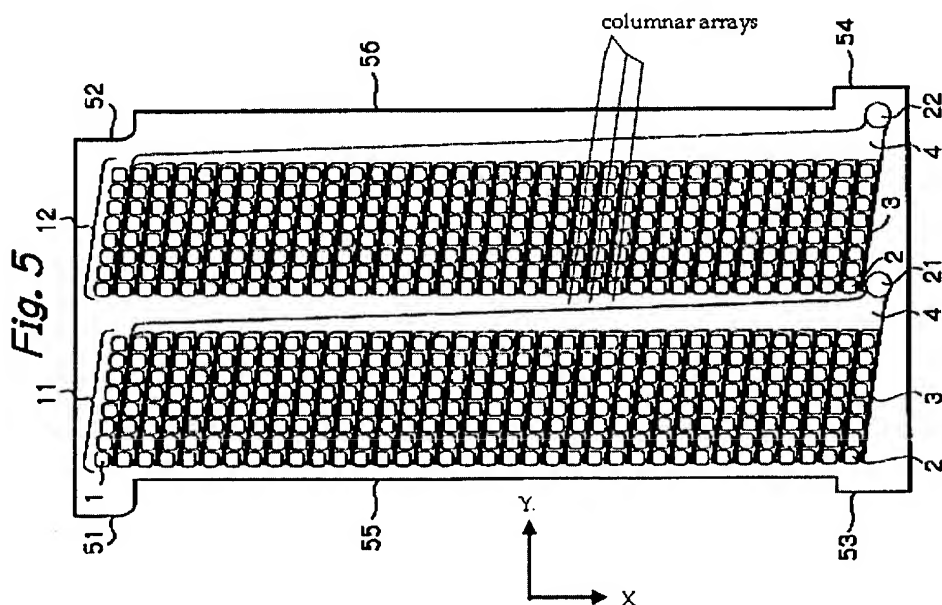
***regarding claims 17 and 18, a drop emitting device comprising:**

a linear array (element 12, Figure 5) of side by side substantially mutually parallel first columnar arrays of ink drop generators (Figure 5; see Drawing B), the first linear array of first

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columnar arrays of ink drop generators extending along a first axis (*X-axis, Drawing B*), and the first columnar arrays being oblique to the first axis (*oblique to X-axis, Drawing B*)

a second linear array (*element 12, Figure 5*) of side by side substantially mutually parallel second columnar arrays of ink drop generators (*Figure 5; see Drawing B*), the second linear array of side by side substantially mutually parallel second columnar arrays of ink drop generators extending along the first axis (*X-axis, Drawing B*), the second columnar arrays being oblique to the first axis (*oblique to X-axis, Drawing B*), and the second linear array of columnar arrays being adjacent the first linear array of first columnar arrays along a second axis orthogonal to the first axis (*Figure 9*)



Drawing B: Figure 5 from Kanda et al., edited for clarification

*regarding claim 19, the drop generators comprise piezoelectric drop generators (*col. 2, lines 21-23*).

*regarding claim 20, the drop generators respectively include an ink pressure chamber (*element 2, Figure 7C*), an outlet channel (*unreferenced channel between elements 1 and 2, Figure 7C*), and a nozzle (*element 1, Figure 7C*).

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Kanda et al. teaches all the claim limitations except the following:

***regarding claims 17 and 18, each first columnar array of ink drop generators comprised of a first linear sub-column of ink drop generators that is interleaved with a second linear sub-column of ink drop generators**

***the first linear sub-column of ink drop generators is fluidically coupled to a first ink manifold**

***the second linear sub-column of ink drop generators is fluidically coupled to a second ink manifold**

***each second columnar array comprised of a third linear subcolumn of ink drop generators that is interleaved with a fourth linear sub-column of ink drop generators**

***the third linear sub-column of ink drop generators is fluidically coupled to a third ink manifold**

***the fourth linear sub-column of ink drop generators is fluidically coupled to a fourth ink manifold**

***regarding claim 21, the first ink manifold receives ink of a first color, and the second ink manifold receives ink of a second color**

***regarding claim 22, the first ink manifold and the second ink manifold receive ink of a same color**

***regarding claim 26, the drop generators are implemented in a laminar stack of metal plates**
Murakami et al. teaches the following:

***regarding claims 17 and 18, each first columnar array of ink drop generators comprised of a first linear sub-column of ink drop generators (*elements 21 along line L1, Figure 19*) that is interleaved with a second linear sub-column of ink drop generators (*elements 22 along line L2, Figure 19*)**

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*the first linear sub-column of ink drop generators is fluidically coupled to a first ink manifold (*col. 9, lines 1-9*)

*the second linear sub-column of ink drop generators is fluidically coupled to a second ink manifold (*col. 9, lines 1-9*)

*each second columnar array comprised of a third linear subcolumn of ink drop generators (*elements 21 along line L1, Figure 19*) that is interleaved with a fourth linear sub-column of ink drop generators (*elements 22 along line L2, Figure 19*)

*the third linear sub-column of ink drop generators is fluidically coupled to a third ink manifold (*col. 9, lines 1-9*)

*the fourth linear sub-column of ink drop generators is fluidically coupled to a fourth ink manifold (*col. 9, lines 1-9*)

*regarding claim 21, the first ink manifold receives ink of a first color, and the second ink manifold receives ink of a second color (*col. 9, lines 1-9 state "if same color ink is supplied," which inherently implies that different color inks may be supplied*)

*regarding claim 22, the first ink manifold and the second ink manifold receive ink of a same color (*col. 9, lines 1-9*)

*regarding claim 26, the drop generators are implemented in a laminar stack of metal plates (*col. 4, lines 51-57*)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine Kanda's arrayed ink drop generator configuration with Murakami's interleaved sub-columns of drop generators. The motivation for doing so, as taught by Murakami, is to prevent unwanted striping to enable high-quality printing (*col. 3, lines 3-10*).

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Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kanda et al. (US 6502921 B2) in view of Murakami et al. (US 6896357 B2), as applied to claim 17 above, and further in view of Eriksen (US 5079571).

Kanda et al. and Murakami et al. teach all claim limitation except the following:

*regarding claim 25, the drop generators receive melted solid ink

Eriksen teaches the following:

*regarding claim 25, the drop generators receive melted solid ink (*col. 3, lines 65-67*)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to substitute melted solid ink for liquid ink. The motivation for doing so, as taught by Eriksen, is that the two types of inks are art-recognized equivalents (*col. 3, lines 65-67*).

Allowable Subject Matter

Claims 7, 8, 23, and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The primary reason for indicating allowable subject matter in claim 7 is the inclusion of the limitation a drop emitting device that includes a plurality of finger manifolds wherein each first sub-column of drop generators is fluidically connected to a first finger manifold and each second sub-column of drop generators is fluidically connected to a second finger manifold. It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught, or suggested by the prior art of record which indicates allowable subject matter.

The primary reason for the allowance of claim 8 is the inclusion of the limitation of a drop emitting device that includes a plurality of side-by-side finger manifolds, wherein as to each column the first sub-column of drop generators is fluidically connected to a first finger manifold, and the

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second sub-column of drop generators is fluidically connected to a second finger manifold that is adjacent to the first finger manifold. It is this limitation found in the claims, as it is claimed in the combination, that has not been found, taught, or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for indicating allowable subject matter in claim 23 is the inclusion of the limitation a drop emitting device that includes a plurality of finger manifolds wherein each first sub-column of drop generators is fluidically connected to a first finger manifold and each second sub-column of drop generators is fluidically connected to a second finger manifold. It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught, or suggested by the prior art of record which indicates allowable subject matter.

The primary reason for the allowance of claim 24 is the inclusion of the limitation of a drop emitting device that includes a plurality of side-by-side finger manifolds, wherein as to each columnar array the first sub-column of drop generators is fluidically connected to a first finger manifold, and the second sub-column of drop generators is fluidically connected to a second finger manifold that is adjacent to the first finger manifold. It is this limitation found in the claims, as it is claimed in the combination, that has not been found, taught, or suggested by the prior art of record which makes these claims allowable over the prior art.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakamura et al. (US 6488355 B2) teaches finger manifolds with a linear array of columnar arrays, the columnar arrays extending obliquely. Seto et al. (US 6783207 B1) teaches a linear array of columnar arrays, the columnar arrays extending obliquely. Further, Seto teaches adjacent linear arrays of columnar arrays. Walmsley et al. (US 6450605 B1) teaches a linear array of columnar arrays, the columnar arrays comprised of interleaving linear arrays. Further Walmsley teaches that each interleaving linear array is supplied from a manifold of a different color.

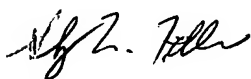
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Communications with the USPTO

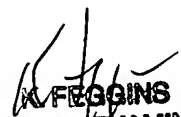
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelby Fidler whose telephone number is (571) 272-8455. The examiner can normally be reached on MWF 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SLF


K. FIGGINS
PRIMARY EXAMINER
2/06